

**RAGLIUS ALBOACUMINATUS (GOEZE) AND RHYPAROCHROMUS VULGARIS (SCHILLING) (LYGAEOIDEA: RHYPAROCHROMIDAE): TWO PALEARCTIC BUGS NEWLY DISCOVERED IN NORTH AMERICA**

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**Abstract.**—Two invasive Palearctic rhyparochromids (Lygaeoidea: Rhyparochromidae) are recorded for the first time in North America. *Raglius alboacuminatus* Goeze is reported from California, Oregon, and northern Utah, and *Rhyparochromus vulgaris* (Schilling), from Oregon and Washington. Although not considered major agricultural pests, these invasive bugs have become serious nuisance pests, invading homes and commercial establishments in large numbers. Provided for each are a summary of the literature, notes on the biology and habitat, diagnosis, description, and photographs of the adult to help separate these nonindigenous bugs from other North American Rhyparochromidae. In addition, *Xanthochilus saturnius* (Rossi), a Palearctic species known in North America only from California, is reported for the first time from Oregon.

**Key Words:** Heteroptera, Lygaeoidea, Rhyparochromidae, *Raglius alboacuminatus*, *Rhyparochromus vulgaris*, North America, new records, California, Oregon, Utah, Washington, invasive

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Both invasive Palearctic seed bugs reported in this paper, *Raglius alboacuminatus* (Goeze) and *Rhyparochromus vulgaris* (Schilling), were discovered after they attracted attention as serious nuisance pests by homeowners and various local businesses. For *Raglius alboacuminatus*, these events occurred in California and Utah; for *Rhyparochromus vulgaris*, similar situations were documented in Oregon and Washington. While these nonindigenous insects probably will not become important agricultural pests, they may profoundly influence our environment in other ways. Both species already have affected local economies, causing anxiety among homeowners and creating costly control expenses for commercial establishments.

The first specimens of *Raglius alboacuminatus* were submitted to the Systematic Entomology Laboratory, ARS, USDA, Washington, D.C., in October 1999 by Alan Roe at Utah State University, Logan. Jay Karen (Utah State University), stated that specimens were found invading a local library and causing concern about possible damage to library books. Shortly thereafter, other reports of large numbers of this bug in the region invading homes and schools attracted the attention of the local television, radio, and newspaper media. One local Utah newspaper (*The Herald Journal*) published articles (by M. R. Weibel) with headlines, such as “New Library is Fighting Bugs” (October 11, 1999) and “North Logan Library Shakes Heebie-Jeebies”

(October 15, 1999). In 2000, very large populations of these bugs invaded several buildings of a prominent trade school at Ogden, Utah. A visit to Logan, Ogden, and surrounding areas in 2001 indicated that the populations of *R. alboacuminatus* apparently had collapsed, making it difficult to collect even a few dozen bugs. In August 2002, however, Dr. Karen reported to me that large populations had again developed in the Ogden area in numbers similar to the 2000 outbreak. I also received a specimen of *R. alboacuminatus* from Alan Hardy (California Department of Food & Agriculture, Sacramento) in October 2002 from San Jose, California, that was collected in August 2002 from a population of thousands of specimens invading a home from surrounding old fields. One report from the latter site indicated that one wall of the home was so heavily covered that it appeared "alive with bugs" (A. Hardy, personal communication). More recently, specimens from Benton County, Oregon, were discovered by John D. Lattin (Oregon State University, Corvallis).

In November 2001, I received an e-mail and digital image of another rhyparochromid from Eric LaGasa (Washington Department of Agriculture, Olympia). The images were tentatively identified as representing *Rhyparochromus vulgaris* and later confirmed by examining a series of specimens collected at Orting, Washington. These bugs were present in large numbers in and around a home, many of which were found on sidewalks, siding, and trapped in window sills. A follow-up survey of the area revealed smaller numbers of specimens over a wider area around the Orting area, including a few specimens in a local nursery. Shortly after the Washington discovery, communication with James LaBonte and Kathleen Johnson (Oregon Department of Agriculture, Salem) and John D. Lattin revealed additional specimens collected in Oregon, indicating that this rhyparochromid is well established in the Pacific Northwest.

In this paper, I summarize the known in-

formation on the two Palearctic bugs, *Raglius alboacuminatus* recently discovered in California, Oregon, and Utah, and *Rhyparochromus vulgaris* recently discovered in Oregon and Washington, and provide for each a diagnosis, description, and illustrations of the adult. In addition, *Xanthochilus saturnius* (Rossi), a Palearctic species known in North America only from California, is reported for the first time from Oregon.

The following acronyms are used for depositories cited in this paper: ODA (Oregon Department of Agriculture, Salem); OSU (Oregon State University, Corvallis); USU (Utah State University, Logan); USNM ([United States] National Museum of Natural History, Smithsonian Institution, Washington, D.C.); and WSDA (Washington State Department of Agriculture, Olympia).

*Raglius alboacuminatus* (Goeze)  
(Figs. 1–3)

*Cimex alboacuminatus* Goeze 1778: 266 (original description).

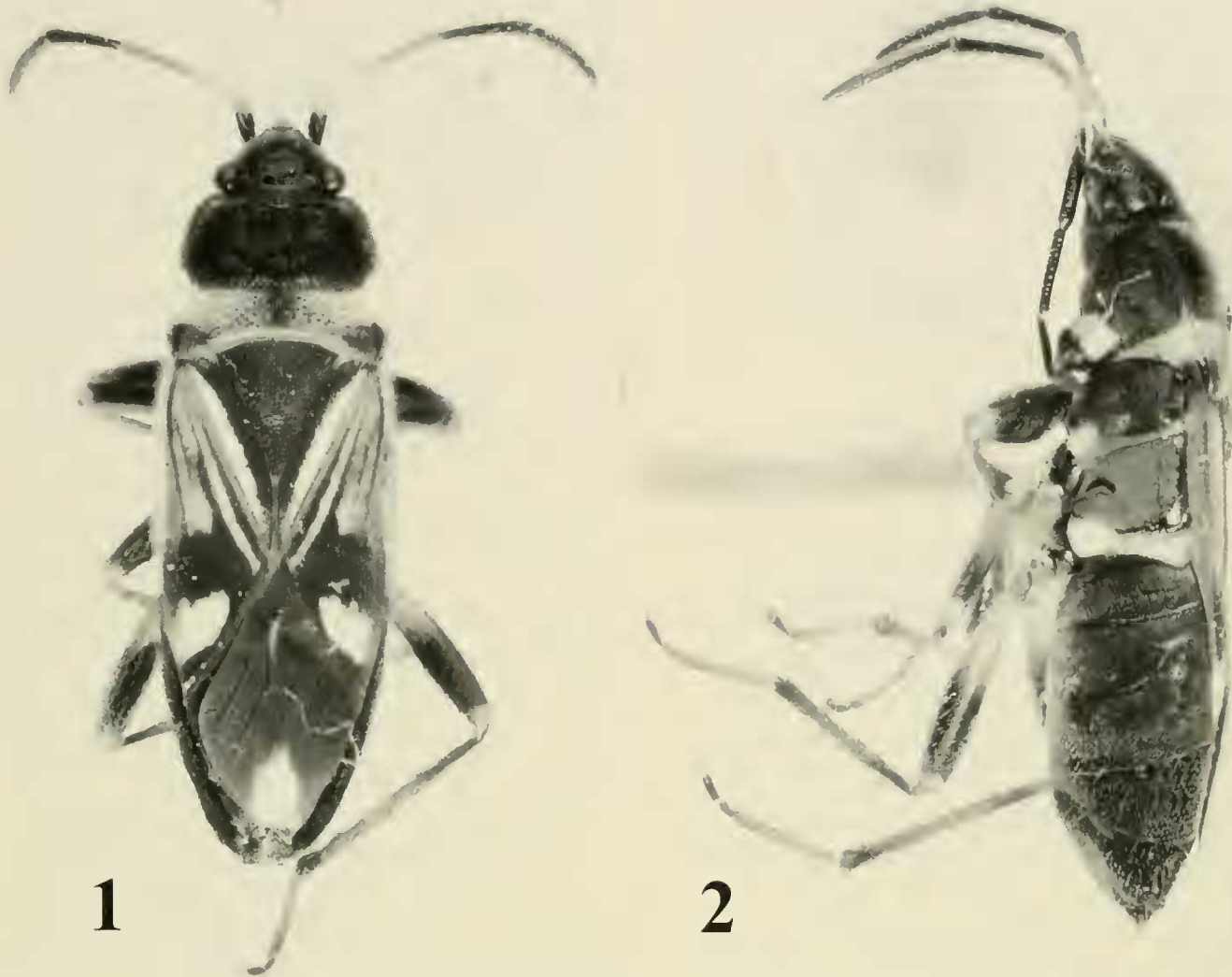
*Rhyparochromus alboacuminatus*: Slater 1964: 1310 (catalog); Péricart 1998: 271 (description, distribution, biological notes, illustrations).

*Raglius alboacuminatus*: Péricart 2001: 208 (catalog). See Slater (1964) and Péricart (1998, 2001) for extensive bibliographies.

**Diagnosis.**—This medium-sized species (Figs. 1, 2) is best recognized by the overall fuscous to black coloration, with a pale or whitish posterior pronotal lobe, a pale anterior half of the corium (with alternating linear brown and pale areas producing a striped appearance), and a white spot at the apex of corium and the apex of hemelytral membrane.

**Description.**—*Male* (n = 10): Length 4.64–5.28 mm, width 1.53–1.72 mm. *Head*: Width 0.98–1.03 mm, vertex 0.63–0.65 mm. *Rostrum*: Length 2.13–2.30 mm, extending to bases of mesocoxae. *Antenna*:





Figs. 1–2. Adult female of *Raglius alboacuminatus*. 1, Dorsal aspect. 2, Lateral aspect.

Segment I, length 0.36–0.43 mm; II, 0.87–1.00 mm; III, 0.85–0.93 mm; IV, 1.03–1.08 mm. *Pronotum*: Length 0.95–1.13 mm, basal width 1.43–1.48 mm.

*Female* (n = 10): Length 4.96–6.56 mm, width 1.64–2.08 mm. *Head*: Width 0.98–1.13 mm, vertex 0.63–0.75 mm. *Rostrum*: Length 2.17–2.50 mm, extending to mesocoxae. *Antenna*: Segment I, length 0.38–0.55 mm; II, 0.85–1.15 mm; III, 0.78–1.05 mm; IV, 0.93–0.115 mm. *Pronotum*: Length 0.98–1.30 mm, basal width 1.48–1.88 mm.

Small to medium sized, slender, elongate-oval, generally dark brown to black with pale or white areas on the pronotum, hemelytra, and hemelytral membrane (Fig. 1). Head shiny black. Labium fuscous. Antennal segment I black, apex narrowly pale brown; segment II pale yellowish brown, narrowly fuscous at base; segments III and

IV uniformly black. Pronotum rectangular, basal margin deeply emarginate, lateral margin narrowly explanate; anterior lobe uniformly shiny black, impunctate, gently and evenly swollen; narrower posterior lobe pale or whitish, basal angles black, darkly punctate across base and through middle, punctures fading laterally. Scutellum equilateral, finely punctate, dull black with narrow apex yellowish brown. Hemelytron punctate, most densely along veins; basal half largely pale or whitish; inner half of clavus dark brown, outer half white; corium pale or whitish, narrowly brown along claval suture and veins giving a striped appearance; apical half of corium largely fuscous to black with a large white blotch at apex bordering membrane; membrane black with a round to triangular white spot at middle of apex. Ventral surface black except for white posterior pleural area of

pronotum, thoracic metanotum, and pro-, meso- and meta-acetabulae. Legs: Coxae black; trochanters brown; swollen profemur black, yellowish brown at base and apex, with one large and two to three smaller spines ventrally on apical third; meso- and metafemora black on apical third to half, yellowish brown basally; tibiae brown to yellowish brown, fuscous at bases; tarsi and claws brown.

**Habitat.**—*Raglius alboacuminatus* colonizes open clear areas and borders of woods, and old fields where tall vegetation grows, and seems to prefer sandy, calcareous soils (Wagner 1961, Péricart 1998). In California and Utah, large populations developed in old or fallow fields with mixed vegetation. Late in the season (August to November), adults and late-instar nymphs migrated to irrigated lawns and congregated in and around buildings in enormous numbers, resulting in media attention and concern to businesses and homeowners.

**Biology.**—According to Péricart (1998), *Raglius alboacuminatus* overwinters as adults under the bark of trees, often in large groups, sometimes several meters above ground. Its feeds on fallen seeds and, very often, climbs on vegetation to feed on developing seeds. In the Ukraine, it is frequently found near *Stachys* spp. and other Lamiaceae, such as *Marrubium* sp. and *Bal-lota* sp., or Scrophulariaceae, such as *Verbascum lychnitis* (Putshkov 1969). Overwintering adults emerge in early spring as the weather warms. They deposit one or two eggs, one at a time, in ground litter or on the soil in late April or early May and continue until mid August. Populations can have a second generation, with nymphs developing until September. In the southern Ukraine, a third generation can develop. In England, mating begins in early May and first-generation adults appear by late July to begin a second generation. Eggs are deposited singly in leafy or woody litter (Southwood and Leston 1959).

**Distribution.**—In the Old World, *R. alboacuminatus* is widespread from Great

Britain, throughout much of Europe to the Middle East; into northern Africa, including Algeria, Morocco, Tunisia, and the Canary Islands; and western parts of Asia, including Armenia, Iran, Kazakhstan, Russia, Turkey, Tadzhikistan, and Uzbekistan (Péricart 2001).

This species is recorded for the first time in the United States (Fig. 3) from one county in California (Santa Clara), three counties in Oregon (Benton, Multnomah, and Wasco), and three counties in Utah (Box Elder, Cache, and Weber).

**New United States records.**—CALIFORNIA: 1 ♀, Santa Clara Co., San Jose, 5356 Colony Field Drive, 21 August 2002, P. Hamilton (USNM); 3 ♂♂, 16 ♀♀, Santa Clara Co., San Jose, 5356 Colony Field Drive, 121.84°N, 37.26°W, 24 August 2002, M. Nachand (USNM). OREGON: 1 ♂, 1 ♀, Benton Co., Adair, #3-02, SWPM recycler, 23-IX-2002, EWB Survey, ex. funnel traps with alpha-pinene & ethanol (ODA); 1 ♂, 1 ♀, Benton Co., Adair, #30-02, SWPM recycler, 23-IX-2002, EWB Survey, ex., funnel trap with ethanol lure (ODA); 4 ♀♀, Benton Co., Adair, #03-02, SWPM recycler, 30-IX-2002, EWB Survey, ex. funnel traps with ethanol lure (ODA, OSU); 1 ♀, Benton Co., Corvallis, #03-01, SWPM recycler, 30-IX-2002, EWB Survey ex. funnel traps with ethanol lure (ODA); 1 ♂, Multnomah Co., Portland, #51-03, SWPM importer, 23-IC-2002, EWB Survey, ex. funnel traps with chalcoprax (ODA); 1 ♀, Multnomah Co., #51-03, SWPM importer, 12-IV-2002, EWB Survey, ex. funnel traps with ethanol lure (ODA); 1 ♀, Wasco Co., The Dalles, #65-42, urban vicinity, volatile blend lure (ODA). UTAH: 1 ♂, 2 ♀♀, Box Elder Co., Brigham City, Poplar Drive, July 2000, T. Houguad (USNM); 4 ♂♂, 2 ♀♀, Cache Co., Logan, 14 October 1999, J. Karen, in Library storage facility (USNM); 2 ♂♂, 2 ♀♀, Cache Co., North Logan, 28 October 1999 (USNM); 8 ♂♂, Cache Co., North Logan City Library, 41°46'40"N, 111°49'11"W, 16 July 2001, elev. 4,800', T. J. Hen-



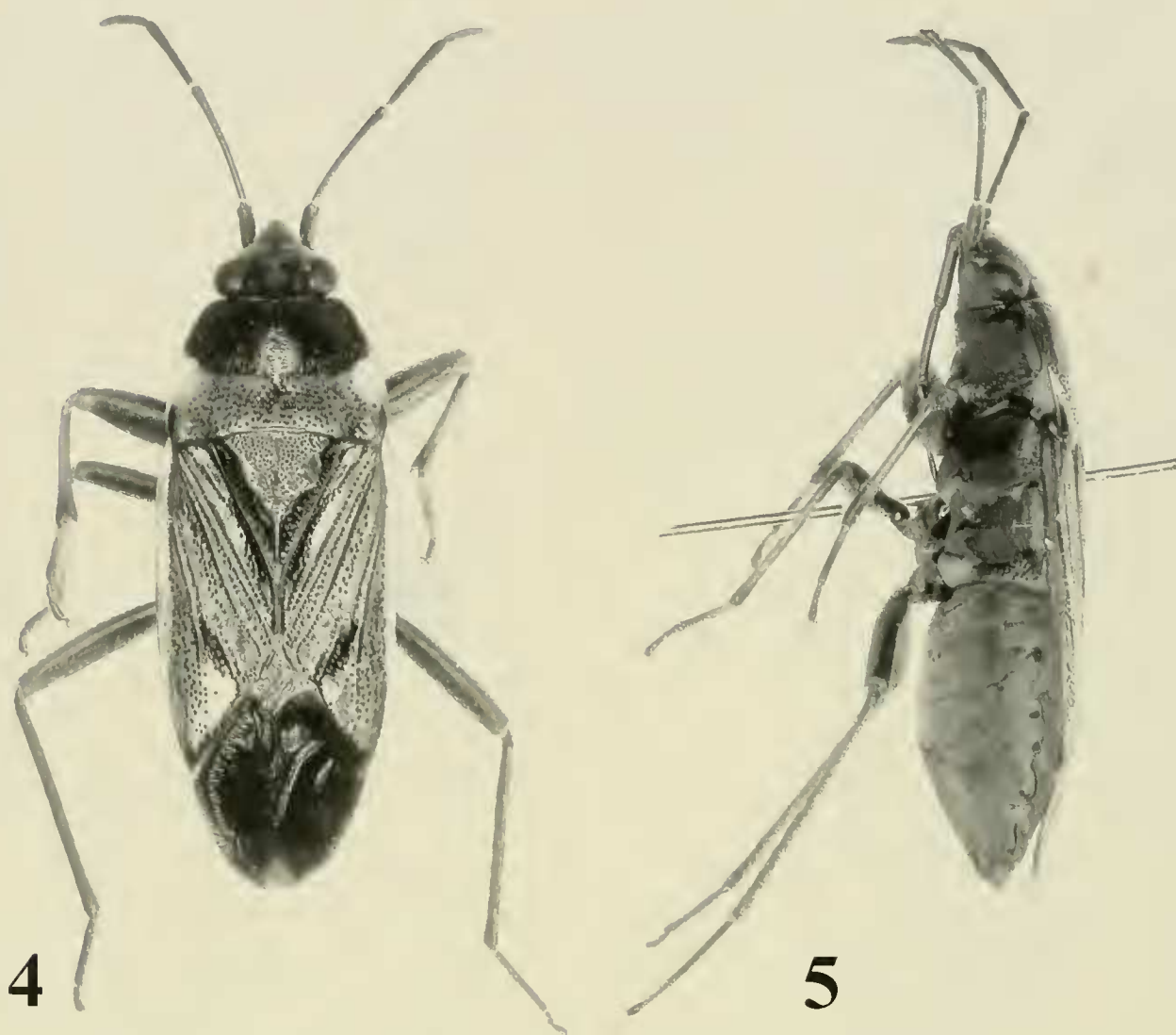
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Fig. 3. Distribution of *Raglius alboacuminatus* in the United States.

ry and A. G. Wheeler, Jr. (USNM); 4 ♂♂, Cache Co., River Heights, 7–12 November 1995, Dale Nielson (USNM, USU); 13 ♂♂, 62 ♀♀, Weber Co., Ogden, Ogden Weber Tech Ctr., 41°5'56"N 111°58'10"W, 16 July 2001, elev. 4,400', T. J. Henry and A. G. Wheeler, Jr., taken on walls and walks of the center (USNM).

*Rhyparochromus vulgaris* (Schilling)  
(Figs. 4–6 )  
*Pachymerus vulgaris* Schilling 1829: 65 (original description).  
*Rhyparochromus vulgaris*: Southwood and Leston 1959: 95 (biological notes, illustrations); Wagner 1961: 85; Slater 1964: 1322 (catalog); Slater and O'Donnell





Figs. 4–5. Adult female of *Rhyparochromus vulgaris*. 4, Dorsal aspect. 5, Lateral aspect.

1995: 178 (catalog); Péricart 1998: 304 (description, biological notes, illustrations); Péricart 2001: 211 (catalog). See Slater (1964) and Péricart (1998, 2001) for extensive bibliographies.

**Diagnosis.**—This relatively large species (Figs. 4–5) is distinguished by the black head, antennae, femora, anterior half of the pronotum, scutellum, and membrane (sometimes with a small pale or white mark at apex); and the dark punctured, pale or yellowish-brown hemelytra, with a large quadrate black spot on the inner angle of the corium.

**Description.**—*Male* ( $n = 10$ ): Length 6.48–7.27 mm, width 2.38–2.62 mm. *Head*: Width 1.40–1.57 mm, vertex 0.75–0.83 mm. *Rostrum*: Length 2.85–3.01 mm, extending to middle coxae. *Antenna*: Seg-

ment I, length 0.55–0.61 mm; II, 1.40–1.66 mm; III, 1.18–1.31 mm; IV, 1.28–1.47 mm. *Pronotum*: Length 1.38–1.55 mm, basal width 2.13–2.38 mm.

*Female* ( $n = 10$ ): Length 7.62–8.26 mm, width 2.75–2.98 mm. *Head*: Width 1.45–1.53 mm, vertex 0.85–0.88 mm. *Rostrum*: Length 3.14–3.22 mm, extending to middle coxae. *Antenna*: Segment I, length 0.58–0.63 mm; II, 1.43–1.50 mm; III, 1.08–1.28 mm; IV, 1.25–1.38 mm. *Pronotum*: Length 1.55–1.65 mm, basal width 2.48–2.73 mm.

Large, oval, shiny, dark brown to black with pale or white areas on the pronotum, hemelytra, and sometimes the apex of the hemelytral membrane. Head shiny black, covered with short, dense, silvery setae, except for more glabrous vertex posterior to midline of eyes. Labium uniformly fuscous

or black. Antenna uniformly fuscous to black. Pronotum quadrate, basal margin nearly straight, lateral margins explanate and weakly recurved; anterior lobe shiny black including explanate margins, weakly swollen; posterior lobe, including margin pale yellow to white, narrowly fuscous across base, uniformly dark punctured, less so laterally. Scutellum equilateral, shiny black, finely punctate. Hemelytron pale or yellowish brown; clavus black on inner half, with a pale or white blotch at base; corium yellowish brown with rows of dark punctures, apical third with a fuscous or black blotch, area bordering membrane pale or whitish; membrane black, sometimes with a small pale blotch at middle of apex. Ventral surface shiny black, with dorsal third of posterior pleural area of pronotum, posterior half of metanotum, and acetabulae pale yellowish or white. *Legs*: Coxae and trochanters fuscous to black; femora black, narrowly yellowish brown apically; metatibia black, pro- and mesotibiae yellowish brown, more fuscous basally and apically; tarsi and claws brown to fuscous.

*Habitat*.—*Raglius vulgaris* frequents clearings, forest edges, mixed forests, parks, woods, borders of gardens, and other shaded biotypes (Péricart 1998), often occurring under loose soil litter and stones (Wagner 1961). This species overwinters as adults and nymphs in sheltered places, often in company with other lygaeoids. Putshkov (1969) found as many as 200 adults and 5<sup>th</sup> instars under the bark of a beech tree near mid August in Russia. Adults and nymphs may become active on warm days during fall and winter.

*Biology*.—According to Péricart (1998), females begin ovipositing in early May, depositing eggs one at a time in ground litter. Eggs hatch through July. This species is known to feed on the seeds of numerous plants, including raspberry, nettles, and sage, and on the fallen seeds of elms, poplar, and other plants. The first adults appear in the Ukraine in early July (Putshkov 1969). Most

individuals feed until late September before seeking overwintering shelter.

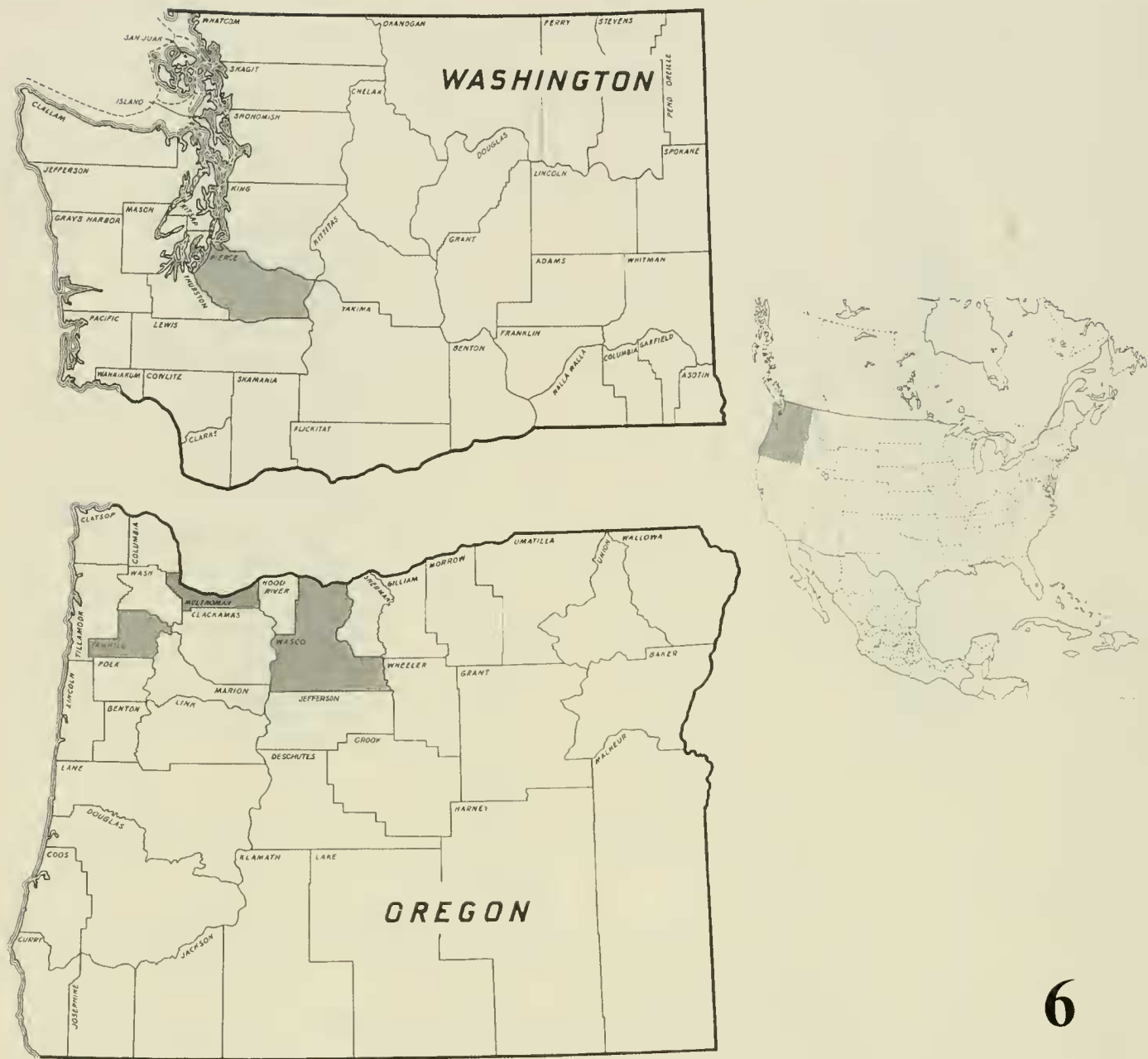
*Distribution*.—In the Old World, *R. vulgaris* is widespread in Europe; north Africa, including Algeria, Morocco, and the Canary Islands; and Asia from western Russia to China, Mongolia, and Korea (Péricart 2001).

This species is recorded for the first time in the United States (Fig. 6) from two counties in Oregon (Multnomah and Wasco) and one county in Washington (Pierce).

*New United States records*.—OREGON: 1 ♂, Multnomah Co., Portland, funnel trap, alpha-pinene & ethanol lure, 18 September 2001 (USNM); 2 ♂♂, Multnomah, Portland, #51-04 SWPM importer, 23-IX-2002, EWB Survey, ex. funnel traps with ethanol lure (ODA); 1 ♂, Multnomah Co., Portland, #51-03, SWPM importer, 23-VII-2002, EWB Survey, ex. panel traps with spruce volatile blend lure (ODA); 1 ♂, Multnomah Co., Portland, #51-19, SWPM recycler, 19-IX-2002, EWB Survey, ex. funnel traps with alpha-pinene & ethanol (ODA); 1 ♂, Multnomah Co., Portland, #51-04, SWPM importer, 2- X (Oct) 2002, EWB Survey, ex. funnel traps with exotic *Ips* lure (ODA); 1 ♂, Multnomah Co., Portland, #51-07, 16-X (Oct) 2002, EWB Survey, ex. funnel traps with apha-pinene & ethanol (ODA); 3 ♀♀, Multnomah Co., Portland, #51-19, SWPM recycler, 3-X (Oct) 2002, EWB Survey, ex. funnel traps with alpha-pinene & ethanol & panel trap with ethanol (ODA); 1 ♀, Wasco Co., The Dalles, funnel trap, ethanol lure, mill site, 25 September 2001 (USNM); 1 ♀, Yamhill Co., Newberg, #71-01, SWPM recycler, 23-IX-2002, EWB Survey, ex. funnel traps with chalcoprax (ODA). WASHINGTON: 6 ♂♂, 8 ♀♀, Pierce County, NW Orting, N 47°06.000, W 122°12.860, 5 November 2001, Veronica Kuebler coll., hand collected, ODA 999-1010 S (USNM).

#### *Xanthochilus saturnius* (Rossi)

*Xanthochilus saturnius* is a widespread Palearctic species, ranging throughout much of Europe, northern Africa, and west-



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Fig. 6. Distribution of *Rhyparochromus vulgaris* in the United States.

ern Asia (Péricart 2001). Henry and Adamski (1998) gave the first North American report of this species (as *Rhyparochromus saturnius*) based on specimens from 17 counties in California.

Since the Henry and Adamski (1998) report, specimens of *X. saturnius* have been intercepted in Japan on produce exported from California. Dr. J. A. Slater (personal communication) identified two specimens sent to him by Goro Takihiro (Yokohama Plant Protection Station, Yokohama, Japan) in September 1999, adding a new twist to the impact invasive insects may have in foreign lands.

The following specimens identified by J. D. Lattin represent the first state record of *X. saturnius* in Oregon.

Specimens examined.— OREGON: 1 ♂, Benton Co., Corvallis, #03-01, SWPM importer, 29-X (Oct) 2002, EWB Survey, ex. funnel traps with exotic *Ips* lure (ODA); 1 ♀, Benton Co., Corvallis, #03-01, SWPM importer, 30-IX (Sept) 2002, EWB Survey, ex. funnel traps with exotic *Ips* lure (ODA).

DISCUSSION

As Hoebeke and Page (2002) aptly noted, “Because of dramatic increases in international travel, combined with a boom-



ing world-trade industry, plant and animal species have become globetrotters.” Henry and Adamski (1998) indicated it was not surprising that the Palearctic rhyparochromid *Xanthochilus saturnius* (Rossi) had become established in California, considering that over the previous nine years, it had been intercepted more than 40 times at ports-of-entry in the United States by APHIS/PPQ personnel, almost exclusively on pallets of tile and marble imported from the Mediterranean Region. Since that report (Henry and Adamski 1998), there have been more than 20 additional U.S. interceptions of *X. saturnius*, including new records reported in this paper for Oregon. Similarly, *Raglius alboacuminatus* has been intercepted 22 times since 1990 and *Rhyparochromus vulgaris*, 67 times during the same period. Lattin and Wetherill (2002) recently documented the establishment of another Old World heteropteran, the oxycarenid *Metopoplax ditomoides* (Costa), which was found on commercial hazelnut, *Corylus avellana* (L.), and swarming in large numbers around homes in several Oregon counties; and Hoebeke and Carter (2003) reported large numbers of the pentatomid *Halysomorpha halys* (Stål) in eastern Pennsylvania, a potential agricultural pest from eastern Asia. Between 1989 and 2002, *M. ditomoides* was intercepted 73 times at U.S. ports-of-entry, and *H. halys*, 15 times. The frequency of interceptions for the above exotic bugs makes it fairly certain that they arrived in this country as stowaways in international commerce.

While invasive species such as the *Halysomorpha halys* are potential agricultural pests, others, such as *Raglius alboacuminatus*, *Rhyparochromus vulgaris*, and *Xanthochilus saturnius* might affect our environment in other ways. Hoebeke and Page (2002) pointed out that nonindigenous insects have the potential to disrupt native environments, threaten fragile ecosystems, and reduce local biodiversity. The environmental effects of the two alien rhyparo-

chromids reported in this paper must await further assessment.

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